



General

Guideline Title

Guideline for preoperative patient skin antisepsis.

Bibliographic Source(s)

Wood A, Conner R. Guideline for preoperative patient skin antisepsis. In: 2015 guidelines for perioperative practice. Denver (CO): Association of periOperative Registered Nurses (AORN); 2014. p. 43-66. [166 references]

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Note from the Association of periOperative Nurses (AORN): Perioperative registered nurses (RNs) play a critical role in developing protocols for preoperative bathing, selecting and applying preoperative patient skin antiseptics, and facilitating appropriate hair removal when necessary. The original guideline document provides the perioperative RN and other perioperative team members with evidence-based practice guidance for preoperative patient skin antisepsis to promote patient safety and reduce the risk of surgical site infection (SSI).

- I. Patients should bathe or shower before surgery with either soap or an antiseptic.
- II. Hair removal at the surgical site should be performed only in select clinical situations.
- III. A multidisciplinary team including perioperative RNs, physicians, and infection preventionists should select safe and effective antiseptic products for preoperative patient skin antisepsis.
- IV. Perioperative team members should apply the preoperative patient skin antiseptic in a safe and effective manner.
- V. Perioperative team members should review and follow the skin antiseptic manufacturer's instructions for use and safety data sheets (SDSs) for handling, storing, and disposing of skin antiseptics.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

- Any condition requiring the use of surgical and other invasive procedures
- Surgical site infection (SSI)

Guideline Category

Prevention

Clinical Specialty

Infectious Diseases

Nursing

Preventive Medicine

Surgery

Intended Users

Advanced Practice Nurses

Hospitals

Nurses

Guideline Objective(s)

To provide guidance for preoperative patient skin preparation, including preoperative patient bathing; preoperative hair removal; selection of skin antiseptics; application of antiseptics; and safe handling, storage, and disposal of antiseptics

Target Population

Patients undergoing surgical and other invasive procedures

Interventions and Practices Considered

1. Preoperative patient bathing with soap or antiseptic
2. Preoperative hair removal (in select clinical situations only)
3. Selection of safe and effective antiseptic products by multidisciplinary team
4. Application of antiseptics in a safe, effective manner
5. Utilization of manufacturer's instructions for the use, handling, storage, and disposal of skin antiseptics

Major Outcomes Considered

- Bacterial load on skin
- Surgical site infections (SSIs)
- Skin irritation, allergic reaction, burn injuries, and other harms caused by skin antiseptics

- Urine iodine excretion, thyrotropin and thyroxine levels

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Evidence Review

A medical librarian conducted a systematic literature search of the databases MEDLINE®, CINAHL®, and the Cochrane Database of Systematic Reviews for meta-analyses, systematic reviews, randomized controlled and nonrandomized trials and studies, case reports, letters, reviews, and guidelines. Search terms included *surgical skin preparation, skin preparation, skin prep, skin antisepsis, skin antiseptic, sterile preparation, disinfectants, local anti-infective agents, antiseptic solution, preoperative care, perioperative nursing, preoperative, surgical procedures, surgical wound infection, skin, skin care, paint, scrub, antiseptic shower, antiseptic cloth, chlorhexidine wipe, preoperative shower, preoperative wash, preoperative bathing, bathing and baths, hair removal, shaving, depilation, depilatory, nonshaved, razor, clipping, clipper, povidone-iodine, chlorhexidine, iodine, iodophors, iodine compounds, 2-propanol, alcohols, baby shampoo, isopropyl alcohol, alcohol-based, parachloroxymenol, chloroxymenol, PCMX, DuraPrep, pHisoHex, Prevantics, Hibiclens, Techni-Care, Chlorax-Prep, Betadine, Betasept, PVP-I Prep, ExCel AP, Castile, iodophor, cyanoacrylates, tissue adhesives, chemical burns, skin diseases, dermatitis, skin sensitivity, surgical fires, fires, flammability, flammable, penis, vagina, mucous membrane, stoma, fingernails, nail polish, artificial nails, jewelry, body piercing, body jewelry, and subdermal implant.*

The initial search, conducted on December 5, 2013, was limited to literature published in English between January 2006 and December 2013; however, the time restriction was not considered in subsequent searches. At the time of the search, the librarian also established weekly alerts on the topics included in the search and until February 2014, presented relevant alert results to the lead author.

Before the systematic search, the medical librarian had provided the lead author with a list of the citations from the 2008 revision of the Association of periOperative Registered Nurses (AORN) Recommended Practices for Preoperative Patient Skin Antisepsis for consideration for the 2014 revision. During the development of the guideline, the lead author requested additional articles that either did not fit the original search criteria or were discovered during the evidence appraisal process. Finally, the lead author and medical librarian identified relevant guidelines from government agencies and standards-setting bodies.

Excluded were non-peer-reviewed publications, studies that evaluated skin antisepsis as part of a bundle to prevent surgical site infection (SSI), and low-quality evidence when higher-quality evidence was available.

See Figure 1 in the original guideline document for a flow diagram of literature search results.

Number of Source Documents

166 full-text sources were cited in the guideline.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

I: Randomized controlled trial (RCT) or experimental study, systematic review of all RCTs

II: Quasi-experimental study, systematic review of quasi-experimental studies or combination of quasi-experimental and RCTs

III: Non-experimental studies, qualitative studies, systematic review of non-experimental studies, combination of non-experimental, quasi-experimental, and RCTs, or any or all studies are qualitative

IV: Clinical practice guidelines, position or consensus statements

V: Literature review, expert opinion, case Report, community standard, clinician experience, consumer experience, organizational experience (quality improvement, financial)

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Articles identified in the search were provided to the project team for evaluation. The team consisted of the lead author and three evidence appraisers. The lead author divided the search results into topics and assigned members of the team to review and critically appraise each article using the Association of periOperative Registered Nurses (AORN) Research or Non-Research Evidence Appraisal Tools as appropriate. The literature was independently evaluated and appraised according to the strength and quality of the evidence. Each article was then assigned an appraisal score. The appraisal score is noted in brackets after each reference, as applicable.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The collective evidence supporting each intervention within a specific recommendation was summarized, and the Association of periOperative Registered Nurses (AORN) Evidence-Rating Model was used to rate the strength of the evidence. Factors considered in the review of the collective evidence were the quality of evidence, the quantity of similar evidence on a given topic, and the consistency of evidence supporting a recommendation. The evidence rating is noted in brackets after each intervention.

Rating Scheme for the Strength of the Recommendations

1: Strong Evidence: Interventions or activities for which effectiveness has been demonstrated by strong evidence from rigorously-designed studies, meta-analyses, or systematic reviews, rigorously-developed clinical practice guidelines, or regulatory requirements

- Evidence from a meta-analysis or systematic review of research studies that incorporated evidence appraisal and synthesis of the evidence in the analysis
- Supportive evidence from a single well-conducted randomized controlled trial
- Guidelines that are developed by a panel of experts, that derive from an explicit literature search methodology, and include evidence appraisal and synthesis of the evidence.

1: Regulatory Requirement: Federal law or regulation

2: Moderate Evidence: Interventions or activities for which the evidence is less well established than for those listed under "1: Strong Evidence"

- Supportive evidence from a well-conducted research study
- Guidelines developed by a panel of experts which are primarily based on the evidence but not supported by evidence appraisal and synthesis of the evidence
- Non-research evidence with consistent results and fairly definitive conclusions

3: Limited Evidence: Interventions or activities for which there are currently insufficient evidence or evidence of inadequate quality.

- Supportive evidence from a poorly conducted research study
- Evidence from non-experimental studies with high potential for bias
- Guidelines developed largely by consensus or expert opinion
- Non-research evidence with insufficient evidence or inconsistent results
- Conflicting evidence, but where the preponderance of the evidence supports the recommendation

4: Benefits Balanced with Harms: Selected interventions or activities for which the Association of periOperative Registered Nurses (AORN) Recommended Practices Advisory Board (RPAB) is of the opinion that the desirable effects of following this recommendation outweigh the harms.

5: No Evidence: Interventions or activities for which no supportive evidence was found during the literature search completed for the recommendation.

- Consensus opinion

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

The Guideline for Preoperative Patient Skin Antisepsis has been approved by the Association of periOperative Registered Nurses (AORN) Guidelines Advisory Board. It was presented as a proposed guideline for comments by members and others. The guideline is effective August 15, 2014.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The literature was independently evaluated and appraised according to the strength and quality of the evidence. Each article was then assigned an appraisal score. The appraisal score is noted in brackets after each reference in the original guideline document, as applicable. Also see the original guideline document for the systematic review and discussion of evidence.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Reduction in the risk of the patient developing a surgical site infection (SSI) by removing soil and transient microorganisms at the surgical site. Refer to the original guideline document for more information concerning benefits of specific interventions.

Potential Harms

- The harms of preoperative patient bathing with an antiseptic may include skin irritation, allergic reaction, or unnecessary treatment with antiseptics.
- The benefits of a 4% chlorhexidine gluconate (CHG) shampoo may not outweigh the potential harms of CHG causing injury by contact with

the eyes, ears, or mouth.

- Neonates, especially extremely premature neonates, are at an increased risk for skin irritation and chemical burns of the skin from both CHG and alcohol-based skin antiseptics.
- The harms of leaving the hair in place at the surgical site may include risk of fire. The risk of fire may be minimized by confining the hair with a water-soluble gel and non-metallic ties or with braids for longer hair.
- Some patients are susceptible to iodism from preoperative skin antisepsis with iodine and iodophor-based antiseptics. A literature review recommended minimizing neonatal iodine exposure because of the risk of significant iodine overload and severe transient hypothyroidism, especially in premature neonates with increased skin permeability and immature thyroid glands.
- Fragile skin or tissue, burns, and open wounds are at a high risk for skin injury during preoperative patient skin antisepsis. Vigorous skin antisepsis in areas of malignancy may potentially spread cancer cells.
- Flammable skin antiseptics are a fuel source and pose a fire hazard. The prevention of pooling of flammable skin antiseptics and allowing for the complete drying of the antiseptic to minimize the fire hazard is supported by published guidance. Disposal of unused flammable skin antiseptics must be handled in a manner to decrease the risk of fire and in accordance with local, state, and federal regulations.
- Refer to the original guideline document for additional discussion of potential harms of specific interventions. Also refer to Table 2 in the original guideline document for considerations and cautions for use of specific skin antiseptics.

Contraindications

Contraindications

- The presence of hair may contraindicate the use of flammable antiseptics according to manufacturers' instructions for use. A flammable antiseptic for preoperative skin antisepsis is contraindicated when the procedure involves an ignition source (e.g., electrosurgical unit [ESU], laser) and the solution is unable to dry completely in hair. According to the Centers for Medicare and Medicaid Services (CMS), alcohol-based skin antiseptics that wick into the patient's hair result in prolonged drying times. No evidence was found that describes the length or amount of hair that constitutes a fire risk during use of alcohol-based skin antiseptics.
- See Table 2 in the original guideline document for contradictions of specific preoperative skin antiseptics

Qualifying Statements

Qualifying Statements

- These recommendations represent the Association's official position on questions regarding optimal perioperative nursing practice.
- No attempt has been made to gain consensus among users, manufacturers, and consumers of any material or product.
- Compliance with the Association of periOperative Registered Nurses (AORN) guideline is voluntary.
- AORN's recommendations are intended as achievable and represent what is believed to be an optimal level of patient care within surgical and invasive procedure settings.
- Although they are considered to represent the optimal level of practice, variations in practice settings and clinical situations may limit the degree to which each recommendation can be implemented.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Mobile Device Resources

Resources

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Identifying Information and Availability

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2014

Guideline Developer(s)

Association of periOperative Registered Nurses - Professional Association

Source(s) of Funding

Association of periOperative Registered Nurses (AORN)

Guideline Committee

Association of periOperative Registered Nurses (AORN) Recommended Practices Advisory Board

Composition of Group That Authored the Guideline

Lead Author: Amber Wood, MSN, RN, CNOR, CIC, CPN, Perioperative Nursing Specialist AORN Nursing Department Denver, Colorado

Contributing Author: Ramona Conner, MSN, RN, CNOR, Manager, Standards and Guidelines, Denver, Colorado

Team Members: Deborah S. Hickman, MS, RN, CNOR, CRNFA, Renue Plastic Surgery, Brunswick, Georgia; Melanie L. Braswell, DNP, RN, CNS, CNOR, Indiana University Health Arnett, Lafayette, Indiana; Judith R. Garcia, MHSS, MS, BSN, RN, CNOR, Perioperative Department, Ohio State University Wexner Medical Center James Cancer Hospital and Solove Research Institute, Columbus, Ohio; J. Hudson Garrett Jr, PhD, MSN, MPH, FNP-BC, Director, Clinical Affairs, PDI Healthcare, Atlanta, Georgia; Lisa Spruce, DNP, RN, ACNS, ACNP, ANP, CNOR, Director of Evidence-based Perioperative Practice, AORN, Inc., Denver, Colorado

Financial Disclosures/Conflicts of Interest

No financial relationships relevant to the content of this guideline have been disclosed by the authors, planners, peer reviewers, or staff.

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Available to subscribers from the [Association of periOperative Nurses \(AORN\) Web site](#) .

Print copies: Available for purchase from the [AORN Web site](#) .

Availability of Companion Documents

The following is available:

- Patient skin antisepsis evidence table. 2014. 29 p. Electronic copies: Available from the [Association of periOperative Nurses \(AORN\) Web site](#) .

Additional implementation tools, including clinical FAQ's, webinars, online learning modules, videos, community discussions and journal articles are available from the [AORN Web site](#) .

In addition, an AORN Guidelines for Perioperative Practice eBook mobile app is available from the [AORN Web site](#) .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on January 9, 2015. The information was verified by the guideline developer on February 25, 2015.

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